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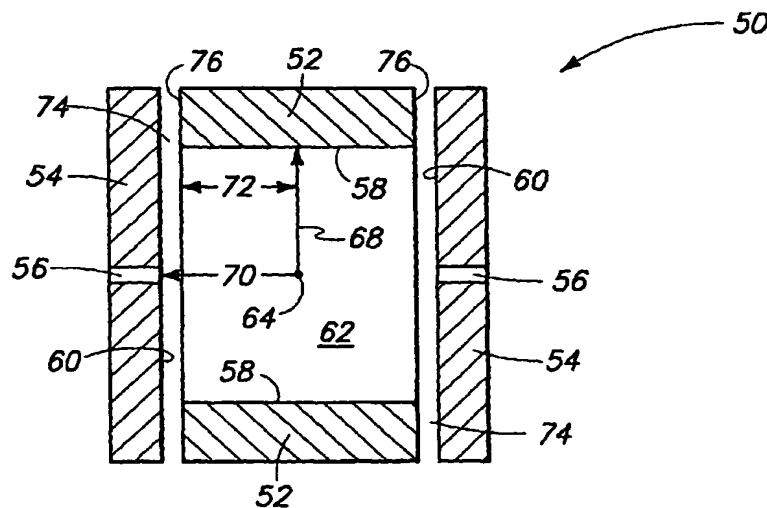
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#### Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM,

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(54) Title: PROCESSES FOR DESIGNING MASS SEPARATORS AND ION TRAPS, METHODS FOR PRODUCING MASS SEPARATORS AND ION TRAPS. MASS SPECTROMETERS, ION TRAPS, AND METHODS FOR ANALYSING SAMPLES



(57) Abstract: In one implementation, processes for designing mass separators from a series of mass separator electric field data and processes for designing an ion trap from a range of data pairs and a mass analyzer scale are provided. Methods for producing mass separators including ion traps having  $Z_0/r_0$  ratios from about 0.84 to about 1.2 are also provided. Mass spectrometers are also provided that can include mass separators in tandem with one being an ion trap having a  $Z_0/r_0$  ratio between 0.84 and 1.2. The present invention also provides methods for analyzing samples using mass separators having first and second sets of components defining a volume with a ratio of a distance from the center of the volume to a surface of the first component to a distance from the center of the volume to a surface of the second component being between 0.84 and 1.2.

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